THE EFFECT OF NANOEMULGEL SPENT MEDIUM STEM CELL FROM HUMAN EXFOLIATED DECIDUOUS TEETH (SHED) ON
THE EXPRESSION OF TGF-Beta1 AND bFGF (Study on the wound healing of the buccal mucosa of Wistar
rats)
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# ABSTRACT

**Objectives:** This study evaluated the effect of nanoemulgel spent medium of stem cells from human exfoliated deciduous teeth (SHED-SM) on the expression of transforming growth factor-beta 1 (TGF-β1) and basic fibroblast growth factor (bFGF) in the healing of oral mucosal wounds, alongside evaluating its cell proliferation on primary human gingival cells.
**Methods:** Traumatic ulcers (Ø3 mm) were induced in the buccal mucosa of 24 male Wistar rats, treated with nanoemulgel SHED-SM and Aloclair Plus® gel groups. TGF-β1 and bFGF expression were analyzed via immunohistochemistry on days 3, 5, and 7. Fibroblasts were counted using Hematoxylin and Eosin staining. Primary human gingival cells exposed to SHED-SM treatment (H1, H3, H5) was evaluated after 24 hours using the MTT assay.
**Results:** The nanoemulgel SHED-SM group accelerated wound closure and re-epithelialization by day 5 compared to controls. TGF-β1, bFGF, and fibroblast density peaked at day 5 in the treatment group. bFGF was significantly upregulated ($p=0.015$), whereas TGF-β1 was not ($p=0.314$). In vitro, all the treatment concentrations maintained cell viability (81.73%–93.44%).
**Conclusion:** Nanoemulgel SHED-SM enhanced oral mucosal wound healing. Although TGF-β1 expression showed no significant difference between groups, bFGF was significantly upregulated in the proliferative phase. Furthermore, nanoemulgel SHED-SM supported the proliferative activity of primary human gingival cells. These findings suggest the ability of nanoemulgel SHED-SM to enhance oral mucosal healing and could be used as a cell-free therapeutic option in regenerative dentistry.

**Keywords:** basic fibroblast growth factor; fibroblast; nanoemulgel; stem cells from human exfoliated deciduous teeth; transforming growth factor-beta 1; wound healing**.**